

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A semiconductor device comprising:
a semiconductor chip having a main surface provided with an integrated circuit including a photoelectric converter;
a plurality of electrodes formed in a vicinity of a periphery of the integrated circuit;
~~a first wiring for electrically connecting the integrated circuit of the semiconductor chip to respective external terminals;~~
a sealing resin for sealing the main surface of the semiconductor chip and at least a first side surface of each of the electrodes ~~first wiring~~, the sealing resin formed so as to have an opening over the a surface of the integrated circuit; and
a light-transmitting cap ~~for covering disposed so as to cover~~ the opening of the sealing resin.
2. (Currently Amended) A semiconductor device according to claim 1, ~~further~~ comprising ~~a plurality of electrodes columnar in shape, formed in the vicinity of the periphery of the integrated circuit,~~
wherein the electrodes are electrically connected to the integrated circuit and to respective external terminals,
wherein each of the electrodes has a columnar shape and is provided with a step at a the top surface thereof, serving as the first wiring, and
wherein the light-transmitting cap is engaged with the step of each at the respective top surface of the electrodes while covering the opening in the sealing resin.

3. (Currently Amended) A semiconductor device according to claim 1, wherein the light-transmitting cap is provided with a ~~second~~ wiring for connecting the electrodes first wiring to the respective external terminals. terminals;

4. (Original) A semiconductor device according to claim 1, wherein a protection film having an opening is provided over the main surface of the semiconductor chip and wherein the opening is positioned over the main surface of the semiconductor chip.

5. (Currently Amended) A semiconductor device comprising:

 a semiconductor chip which has a main surface provided with an integrated circuit including a photoelectric converter;

 a plurality of electrode pads ~~which is~~ formed on the main surface;

 a plurality of first wiring patterns, each of which extends over the main surface and each of which has one a first end connected to the a corresponding one of the electrode pad pads and the other end;

 a plurality of bump electrodes, each of which has a bottom surface contacting with the one a second end of the a corresponding one of the first wiring patterns pattern and a top surface;

 a sealing resin which seals surfaces of the first wiring patterns ~~patters~~, and sides of the bump electrodes, wherein the electrode pads, the first wiring patterns, the bump electrodes and the sealing resin are positioned at a periphery of the semiconductor chip;

 a plurality of external terminals, each of which is formed on the a top surface of the a corresponding one of the bump electrodes electrode; and

 a light-transmitting cap ~~which is~~ provided on the top surfaces of the bump electrodes so

as to cover a center of the semiconductor chip.

6. (Currently Amended) A semiconductor device according to claim 5,

wherein at least some of the bump electrodes have a step steps at the top surfaces surface thereof, and

wherein the light-transmitting cap is engaged with the steps ~~at the top surfaces of the~~ ~~bump electrodes.~~

7. (Currently Amended) A semiconductor device according to claim 5, further comprising second wiring patterns which connect the bump electrodes to ~~the respective ones of~~ ~~the external terminals, wherein the second wiring patterns and which are formed on the light-~~ transmitting cap.

8. (Currently Amended) A semiconductor device according to claim 5, further comprising a protection film having an opening which is provided over the main surface of the semiconductor chip, ~~and~~ wherein the opening is positioned over the main surface of the semiconductor chip.

9. (Original) A semiconductor device according to claim 5, wherein the bump electrodes are arranged in a matrix form.

10. (Currently Amended) A semiconductor device comprising:

a semiconductor chip which has a main surface provided with an integrated circuit

including a photoelectric converter;

a plurality of electrode pads ~~which is~~ formed on the main surface;

a plurality of redistribution wiring patterns, each of which extends over the main surface and each of which has one a first end connected to the a corresponding one of the electrode pads pad and the other end;

a plurality of bump electrodes, each of which has a bottom surface contacting with the ~~one a second end of a the~~ corresponding one of the redistribution wiring patterns ~~pattern and a top surface;~~

a sealing resin which seals surfaces of the redistribution wiring ~~pattern, patterns and sides~~ of the bump electrodes, wherein the electrode pads, the redistribution wiring patterns, the bump electrodes and the sealing resin are positioned at a periphery of the semiconductor chip;

a plurality of external terminals, each of which is formed on the a top surface of the a corresponding one of the bump electrodes electrode; and

a light-transmitting cap ~~which is~~ provided on the top surfaces of the bump electrodes so as to cover a center of the semiconductor chip.

11. (Currently Amended) A semiconductor device according to claim 10,

wherein at least some of the bump electrodes have a step steps at the top surface surfaces thereof, and

wherein the light-transmitting cap is engaged with the steps at the top surfaces of the bump electrodes.

12. (Currently Amended) A semiconductor device according to claim 10, further

comprising wiring patterns which connect the bump electrodes to the respective external terminals, wherein the wiring patterns and which are formed on the light-transmitting cap.

13. (Currently Amended) A semiconductor device according to claim 10, further comprising a protection film having an opening which is provided over the main surface of the semiconductor chip, and wherein the opening is positioned over the main surface of the semiconductor chip.

14. (Original) A semiconductor device according to claim 10, wherein the bump electrodes are arranged in a matrix form.

15. (Canceled)